

REMARKS

Claim 23 was amended to include both Sc and Zr amounts in the alloy that were previously added as limitations to claim 1.

Claims 1-9, 23-51 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Warner (US 2002/0162609 A1). The foregoing claim amendments have been made to overcome the rejection of claims 23-31, 33, and 34 under 35 U.S.C. 103 as being unpatentable over Warner. A detailed discussion of the claim amendments and why they overcome the rejection follows.

Independent claims 1 and 23 each require Sc and Zr as an element of the aluminum alloy. Additionally, claim 35 requires Sc in addition to at least one element from the group Zr, V, or Hf. As indicated by the Examiner, the Warner reference discloses an aluminum alloy including at least one element of Mn, Cr, Zr, Hf, V, Ti and Sc. The amounts of Zr disclosed are 0.05 -0.20 and the amounts of Sc are 0.05-0.3. The Examiner has indicated that Warner teaches a substantial overlap of alloying ranges and creates a prima facie case of obviousness. Applicant submits that Warner does not teach that it would be obvious to use the two claimed elements (e.g. Sc and Zr) in combination for the following reasons.

1. Specifically, Warner does not teach the use of both Sc and Zr. In fact, none of the example alloys disclosed in the Warner reference disclose an alloy containing Sc. Therefore, Applicant submits that the Warner reference does not appreciate the beneficial results that are obtained by using Sc in combination with Zr in the claimed alloy. Additionally, the Warner reference does not appreciate the beneficial results that are obtained by preparing an aluminum

alloy containing Sc in combination with at least one element from the group Zr, V, or Hf. As disclosed in paragraph [0025]-[0028] of the present application, scandium in combination with zirconium is an effective recrystallization inhibitor. As such, commercial alloys based on Al-Zn-Mg-Sc-Zr have been developed. However, there are drawbacks to scandium addition to 7XXX alloys containing about 2% copper. Specifically, the copper level is high enough to combine with scandium, thereby rendering it ineffective. Applicant has been able to overcome the problems associated in prior aluminum alloys by using the composition presently claimed.

According to Ex parte Kuhn, 132 USPQ 359 (P.O. Bd. App. 1961),

“Although applicant is working within broad field encompassed by prior patent and although it might be possible to end up with a product similar to applicant’s by selecting specific items and conditions in the patent, a long experimental program might be required to arrive at such product in the absence of some directions or reasons for making such selection; applicant is entitled to patent protection for his highly specific and limited contribution within patent’s general disclosure since patent had no appreciation of such contribution.”

It is clear after reviewing the Warner reference that the patent has no appreciation for the contribution obtained by using both Zr and Sc in the claimed alloy (or Sc in combination with at least one element from the group Zr, V, or Hf). As disclosed in paragraphs [0032]-[0036] and Table 5, aluminum alloys including Zr and Sc have been shown to have improved UTS and Yield Strength. Although it may be possible to obtain the alloy claimed in the present application by selecting the specific conditions in the patent, there is no guidance or suggestion in the Warner reference to direct one of ordinary skill in the art to use Sc and Zr in an aluminum alloy (or Sc in combination with at least one element from the group Zr, V, Hf). The number of

possible distinct alloys that could be obtained by selecting the various conditions disclosed in Warner is extremely broad. A long experimental program would be required in order to obtain the aluminum alloys claimed in the present applications. Therefore, Applicant submits that he is entitled to his contribution to the art directed to the aluminum alloy claimed since one of ordinary skill in the art would not be motivated to use both Sc and Zr (or Sc in combination with at least one element from the group Zr, V, Hf) in the aluminum alloy.

2. According to MPEP 2144.05, a reference that discloses a range that “is so broad as to encompass a very large number of possible distinct compositions” might present “a situation analogous to the obviousness of a species when the prior art broadly discloses a genus”. See In re Baird, 16 F.3d 380, 29 USPQ2d 1550 (Fed. Cir. 1994). Given the vast number of distinct possible alloys that may be obtained by the disclosed ranges, the prior art suggests a nearly infinite number of possibilities and fails to suggest the aluminum alloy presently claimed. A disclosure of such a vast number of possible alloys does not render obvious the specific alloys claimed by the present invention (e.g. alloys with Zr and Sc). The fact that none of the Examples cited in the Warner reference include Sc would lead one of ordinary skill away from selecting alloys that include Sc and Zr (or Sc in combination with at least one element from the group Zr, V, Hf). The Examples are clearly directed to a preferred aluminum alloy leading away from Sc-containing aluminum alloys. The Examples only include Cr, Zr and Ti from the list of optional elements. Therefore, Applicant submits that the Warner reference directed to the disclosure of a vast number of alloy compositions does not render obvious the specific alloys claimed in the present application.

3. According to MPEP 2144.05, Applicant may rebut a presumption of obviousness by showing “that there are new and unexpected results relative to the prior art”. Table 5 of the present specification provides aluminum alloys containing various amounts of Zr and Sc. Example A contains no Sc, Example B contains no Zr, and examples C-E contain both Zr and Sc. The Warner reference also provides examples of aluminum alloys that do not include Sc (See Examples). As can be seen from Table 5, the UTS and Yield Strength of the alloy are greatly improved when both Zr and Sc are used. Since the Warner reference provides no guidance or reason for making the presently claimed selection of the combined use of Zr and Sc in the aluminum alloy(or the use of Sc in combination with at least one element from the group Zr, V, or Hf), a long experimental program would be required to arrive at the aluminum alloy presently claimed. Therefore, Applicant asserts that the prima facie case of obviousness has been overcome by the showing of unexpected results when using both Zr and Sc in the claimed aluminum alloy.

Claims 8, 30, 42 and 44-51 are directed to an aluminum alloy including Si and Fe in addition to the recited Zn, Mg, Cu, Sc and Zr elements. The Examiner has asserted that the Warner reference “teaches said alloy typically contains about 0.05% Si and 0.07% Fe (see Table 4)”. However, Applicant respectfully disagrees that this statement can be found in the disclosure of the Warner reference. Applicant submits that the Warner reference discloses no ranges for Si and Fe. Additionally, the Warner reference provides no statement that the alloys disclosed typically contain Si or Fe. The Warner reference only provides very specific and isolated examples of alloys including specific amounts of Si and Fe. The only recitation of Si and Fe content in the Warner reference is found in the following Examples:

Example 1: Zn = 8.11 Mg= 2.19 Cu=1.94 Si=0.04
 Fe= 0.07 Zr = 0.09 Cr = 0.06 Ti= 0.025

Example 2: Zn = 8.38 Mg = 2.15 Cu = 1.96 Si = 0.04
 Fe = 0.06 Zr = 0.11

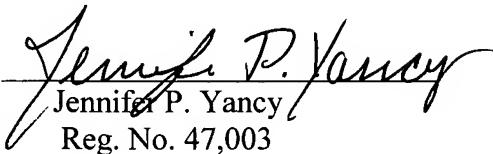
Example 3:

	Si	Fe	Cu	Mg	Zn	Zr	Ti
A	0.049	0.075	1.87	2.35	8.38	0.11	0.03
B	0.045	0.068	1.95	2.27	8.31	0.10	--

Although it may be argued that these Si and Fe amounts fall within the instant ranges, the examples provided do not contain Zn and Cu amounts as claimed in the present application (i.e. 9.0-11.0% Zn and 2.2-2.6% Cu – as provided in claim 44). Applicant submits that a prima facie showing of obviousness has not been established. The Si and Fe amounts listed in the Warner reference are isolated amounts for the specific alloy examples disclosed in the reference. Since the reference does not provide any additional disclosure or guidance suggesting or teaching the higher amounts of Zn and Cu in combination with Si and/or Fe, a prima facie case of obviousness can not be established. Applicant submits that these examples in the Warner reference do not provide overlapping ranges for all of the elements claimed in the present application. Therefore, Applicant submits that the rejection of these claims are overcome since a prima facie of obviousness has not been established.

In view of the foregoing, Applicants respectfully submit that the application is now in condition for allowance. Accordingly, favorable reconsideration of the application is respectfully requested.

Respectfully submitted,

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